

THE SIGNAL CORPS BULLETIN

March, 1929

[WAR DEPARTMENT]

Number 47

SIGNAL CORPS SUPPLY

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of the Army

[This article, originally published in The Quartermaster Review, is republished by
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The Chief Signal Officer of the Army, in addition to his other duties, is charged by law with the procurement, storage, and issue of signaling supplies and equipment employed by the Army, also of photographic and meteorological material. While the Signal Corps is a relatively small supply branch, the great bulk of the articles stored and issued by it are of a special or technical nature and designed to produce specific results when employed by mobile units in the field, or permanently installed at a post. The operations necessary to deliver Signal Corps supplies to troops in the field are briefly as follows:

The research and engineering division of the office of the Chief Signal Officer conducts investigations of new projects and equipment with a view to keeping abreast of the advance of science in the development of technical instruments and articles employed in the art of signaling. This is particularly true of the radio field, where the latest developments of to-day are often obsolete tomorrow. To assist in this work, laboratories are maintained at Fort Monmouth, N. J.; Wright Field, Dayton, Ohio; Washington, D. C.; and Fort H. G. Wright, N. Y. Before an article passes the development stage it is referred to the using branches for trial and recommendation as to its adaptability and suitability. After the development stage has been completed and the article adopted for issue to the Army in the amounts specified in tables approved by the War Department, a type number is assigned for identification purposes and the Signal Corps computes its requirements and presents them to the budget officer of the War Department annually along with all its other requirements for funds. Funds having been appropriated

obviously unnecessary is asked, thereby conceding a point to the heckler.

Of course, the question inspired by a desire to learn deserves the utmost consideration, and the instructor should make every effort to fully cover the doubtful point.

On the other hand, the instructor should, before the start of the period of instruction, prepare a series of questions to cover each point of the instruction. These questions should aim to maintain interest, bring out doubtful features, make the students think, and also determine whether the instruction is getting across to the students.

TIME AND PLACE

Instructions should be carried on in a location where the students are not distracted by outside noises or activities. To attempt instruction near an aviation field, a railroad yard, or a boiler factory, is to start under a handicap. Similarly, to attempt instruction in technical work, which requires nimble fingers, in a field or room when the temperature is below freezing, is attempting a difficult feat. Always try to find a location which offers the least distraction from your instruction, and one which provides the best conditions of temperature, light, ventilation, and size.

In conducting instruction in the Army, the instructor is usually required to cover a certain amount of material in a given time. Therefore, it is necessary to plan a time schedule before the start of the period of instruction. This will diminish the possibility of not covering an important feature due to lack of time. The following is a suggested form for use by the instructor:

TIME SCHEDULE

From--	To--	
		Roll call. Distribution of equipment. Developing interest and introducing subject. Subject No. 1. Subject No. 2. Subject No. 3. Summary. Return of equipment and police of area.

There is a compromise necessary many times between thorough instruction and complete covering of the subject. Your judgment must decide. Frequently, in order to properly cover a point, more time will be required than you had planned. Whether you should go on or keep at it depends on the importance of future instruction. Perhaps later in the course you may find time to return to this

So far we have considered:

- (1) The study by the instructor of the course.
- (2) The analysis of the students' knowledge and ability.
- (3) The organization of the class.
- (4) The preparation of the schedule.
- (5) Planning to arouse interest.
- (6) Providing a suitable place of instruction.
- (7) Procuring the necessary equipment.
- (8) Teaching subject by applicatory system.
- (9) Preparing time schedule for each period.

The plan for the period is completed. It is now necessary to follow it during the instruction. If the plan is good and is carried out properly, the instruction will be successful. In the actual personal conduct of instruction there are several rules on dress, deportment, mannerisms, attitudes, and vocal delivery which must be observed to obtain the best results. These will be taken up in the next article which discusses the lecture.

THE ARMY AMATEUR RADIO SYSTEM

By Maj. D. M. CRAWFORD, S. C.

In 1925 the Signal Corps entered into an affiliation with the transmitting radio amateurs of the United States. Three years of operation under the original plan have demonstrated the advisability of revising that plan to provide for an expansion of the system to cover all parts of the United States.

The value of such a plan has well been illustrated in such emergencies as the Vermont floods and the Florida hurricane. In the latter case communication to and from the stricken area for three nights and two days was through War Department Station WAR. (old WVA) and an amateur at West Palm Beach.

The revised plan of affiliation and the regulations thereto follow. They go into effect March 1, 1929.

AFFILIATION OF THE SIGNAL CORPS AND THE TRANSMITTING RADIO AMATEURS OF THE UNITED STATES

[Revised to January 1, 1929]

GENERAL PLAN

1. The Signal Corps desires to cooperate with the transmitting radio-amateurs throughout the country for the following purposes:

(a) To provide additional channels of communication throughout the continental limits of the United States that can, in time of emergency, be

used to augment or replace the land lines, both telephone and telegraph, that may be seriously damaged or destroyed by flood, fire, tornado, earthquake, ice, riots, or insurrections.

(b) To place at the disposal of military commanders of all components of the Army of the United States and of the Red Cross such amateur radio channels of communication as may be developed under this plan.

(c) To provide civilian radio operators with a knowledge of Army methods of radio procedure and of the basic principles of using radio in the field.

(d) To establish contact with a considerable number of civilian radio operators, acquainting them with the Signal Corps and its activities, and securing their aid in experimental work, tests, etc.

(e) To render such encouragement and assistance as may be desirable to firmly establish and perpetuate the American amateur.

2. The agencies to be employed in this work are the Regular Army and the transmitting radio amateurs. Each corps area signal officer will appoint an officer at his corps area headquarters to act as corps area liaison agent between a representative of the transmitting radio amateurs of that corps area and the corps area signal officer.

3. Each corps area signal officer will select and appoint one amateur (to be known as the radio aide) as the representative of the transmitting radio amateurs of that corps area.

4. The Chief Signal Officer of the Army will, considering the recommendations of the several corps area signal officers, appoint one amateur (to be known as the chief radio aide) as the Army representative of all transmitting amateurs of the United States.

5. A general outline of the Army amateur radio system is as follows:

a. An Army amateur radio net, comprising one station in each corps area and in each department in which amateur activities are permitted. The net control station to be located at Fort Monmouth, N. J., and operating under the supervision of the Chief Signal Officer.

b. There will be organized in each corps area, by the corps area signal officer, the following amateur radio nets:

(1) A corps area amateur radio net, comprising one station in the capital of each of its States. A corps area amateur station or a selected civilian amateur station will act as net control station.

(2) State amateur radio nets based on the division of each State into approximately five geographical areas. The stations will normally be located in the principal city or town of each geographical area, or near the center of the area. The State capital station will act as net control station.

(3) District amateur radio nets, each comprising approximately five stations so distributed as to best accomplish the requirements of paragraph 1(a). The geographical area station referred to in (2) above will act as net control station.

(4) Local amateur radio nets, comprising all amateurs in the local areas for which the respective substations of the district net may act as net control station. Local nets will operate on schedules prepared by the net control station and approved by the corps area signal officer.

c. All nets (except local nets) will function simultaneously on the same day of the week. Schedules and frequencies for use in the various nets will be announced from time to time by the Chief Signal Officer.

6. All amateur stations must comply with the Department of Commerce regulations regarding amateur stations. The licenses for such amateur stations must be obtained from the radio inspector for the radio district in which the station is located.

7. To generate the desired amount of message traffic for the amateur operators to handle, traffic of various kinds will be sent from the Army net control station to all corps area and department stations, which should relay such portions of it to their lower nets as may be advisable. Likewise, all net control stations will originate traffic suitable for their nets.

8. In cases of local emergencies, where the land lines have ceased to function, and/or all traffic should be sent by Army amateur radio. In such cases the local military units should be requested to protect the radio station of the amateur serving them, as this station may be their only means of communication with the outside world.

9. Corps area signal officers will arrange for the distribution of such instruction literature as may be available to the cooperating amateurs within their corps areas. This literature should be of such a nature as to instruct the amateur in tactical radio-telegraph procedure, Army codes and ciphers, and Army apparatus and methods. Tests of a nation-wide character will be arranged and conducted by the Chief Signal Officer.

10. Corps area signal officers will furnish their respective radio aides with a list of the National Guard and reserve units which amateur stations in that corps area should serve in an emergency and/or upon request by the organizations concerned. The radio aide will inform individual amateur stations of the units (and their locations) to which radio service should be offered.

11. Amateur radio operators are bound, under the laws and regulations governing radio communication, to preserve the secrecy of all radio messages. They are likewise duly obligated to comply with the above laws and such regulations as the Department of Commerce may promulgate, and participation in this plan does not release them from this obligation. In time of local emergency they should cooperate to the fullest possible extent with the local military organizations. In return, the local military authorities should do everything in their power to protect the amateur's station from the depreciation of the lawless element should the occasion arise. The amateur's main value to the working out of this plan is that of cooperating by the use of his own station in the transmission and reception of certain traffic of an official or semiofficial nature. He will be expected to handle this traffic by the Army methods of tactical radio procedure whenever possible. He will not, except in emergencies or upon the expressed consent of the corps area signal officer concerned, handle this Army radio traffic with stations that have not been designated as Army amateur stations in the same way that he has. He will be instructed in the use of certain codes and will in many cases be required to encode his messages before transmitting them. Likewise he will, before delivery, have to decode such messages as come to him in code.

12. a. Each corps area signal officer will, considering the recommendations of his radio aide, designate an alternate station to act as net control station for the corps area net.

b. Each corps area signal officer will, considering the recommendations of his radio aide and of the net control station concerned, designate an alternate net control station for each State, congressional, and other lower nets.

13. The Army amateur net control station at Fort Monmouth, N. J., will be in direct charge of the Army amateur liaison agent and will function under the direct supervision of the Chief Signal Officer. This station will transmit to the other Army net stations such material as will be of value to them. The Army amateur liaison agent will furnish corps area signal officers with copies of such instruction pamphlets as may be available in the Signal School. Where this material is not available in sufficient quantities, the corps area signal of-

Officers will be expected to mimeograph such portions of it as may be necessary for distribution within their corps areas. A station of sufficient power to communicate with all Army amateur net stations is installed at Fort Monmouth, N. J., and will be kept open under a regular published schedule.

14. A certificate of appointment will be issued by corps area signal officers to each of the amateur radio stations qualifying and accepting an appointment as a net control, alternate net control, or local station. These certificates will be signed and sealed by the corps area signal officers. They will be supplied by the Chief Signal Officer of the Army. These certificates are a confirmation of their appointment and contain the authority for their handling such official or semiofficial traffic as may be given them. The certificate should be posted in a conspicuous place in the amateur's radio station. Renewal of the certificate, by indorsement thereon, will be given only when the service of that station has been honest and faithful.

15. Stations designated to serve in this plan shall be known as Army amateur radio stations.

16. No additional funds or personnel will be allotted for this work. Such facilities as are available at corps area headquarters and at Fort Monmouth, N. J., will be utilized to the fullest extent in carrying this project through to a successful conclusion.

17. The outline of organization given above should not be regarded as hard and fast. Local conditions may require modifications. The organization adopted should be that best adapted to carrying out the spirit and purposes of the affiliation.

REGULATIONS FOR ARMY AMATEUR RADIO SYSTEM

[Revised to January 1, 1929]

SECTION I.—NET STATIONS, HOW SELECTED

1. *Corps nets.*—In the various corps-area nets the net control station is the station at or near corps-area headquarters. The other stations in a corps-area net will include one station at or near the State capital in each State of that corps area. Obviously, there may be a number of qualified stations in or near a State capital and it is the function of the corps-area signal officer, through contact with his radio aide, to determine which of the available stations should be selected as the net control station of the State net. It is not essential that this selection be made immediately but one station may be selected and given a trial for a period of a month or two to determine if the station and the operator are capable of giving service on regular schedules. As soon as a selection is finally made a certificate will be issued to that station announcing it as an Army amateur radio station. An alternate station should be selected for each State capital.

2. *State nets.*—The stations selected as indicated in the previous paragraph become the net control stations for the several State nets. In a manner similar to that indicated in the above paragraph, regular and alternate stations will be selected in each geographical area of each State in the corps area. In other words, the State net includes the State capital station and approximately five substations located near the centers of the five geographical areas of the State. It should be borne in mind that every station of whatever nature ultimately becomes the net control station for the next lower net, hence the station selected

should be capable of working in the forward net and in the lower net. Furthermore, the operator must be well qualified and reliable, since all nets (except local nets) throughout the United States will function simultaneously. (This idea has the approval of the American Radio Relay League which states that there should be no technical deterrent to its operation.)

3. *District nets.*—Each geographical area of each State is further subdivided into approximately five local areas with one station (and its alternate) in each. Naturally, the general idea must be modified in each State, by the corps-area signal officer, to fit the circumstances.

SECTION II.—FREQUENCY ASSIGNMENTS

NOTE.—Since each station, except substations in local nets, is required to work in two nets, care must be taken to select such amateur stations as may be capable of transmitting and receiving in each of the nets to which it is to be assigned.

1. *Army net.*—The Army frequency near the amateur 40-meter band will be used to all corps areas and departments.

NOTE.—Pending the assignment of a definite Army frequency for this purpose, the 40-meter amateur band may be used.

2. *Corps area nets.*—Frequencies in the 40 or 80 meter band will be used in all corps area nets. (The American Radio Relay League has indicated that the normal difference in frequencies selected by the several corps area net control stations will be sufficient to prevent interference. In other words, the corps area nets actually operate on nine different frequencies.)

3. *State nets.*—The 80-meter amateur band will be used. (Again, it is the opinion of the traffic manager of the American Radio Relay League that, due to the natural differences in frequencies selected by the State net control stations, no interference will result. Since there are relatively few stations in each net, it is believed possible and practicable to have the transmitters and receivers of all stations in a net calibrated to operate on the same frequency throughout the year. If, therefore, on first trial, it is found that the frequency selected by the Maine State control station, for example, conflicts with that of the New Hampshire control station, the corps area signal officer should, if necessary, direct one of them to shift his wave length slightly.)

4. *District nets.*—Frequencies in the 80-meter band will be used. With about 10 different frequencies within the 80-meter band, it is believed that no interference effects will be encountered anywhere in the country; this, of course, requires the supervision and cooperation of the corps area liaison officer and the radio aide.

5. *Local nets.*—Frequencies in the 80 or 160 meter band may be used. The particular frequencies selected must be noninterfering with the frequencies used in the higher nets. Local nets will not operate on the same day as the higher nets.

SECTION III.—CERTIFICATES

1. As a general policy Army amateur radio-station certificates will be issued for two years to stations qualifying as net control station, alternate net control station, or local station; at the end of two years, if the station is believed worthy and reliable and its service has been honest and faithful, the corps area signal officer will renew the certificate by indorsement thereon for two years more.

2. A new certificate should be issued to all amateurs qualifying under the new plan, whether or not they hold an old certificate. The present certificate form will be used as follows:

a. The blank space on line 6 will contain "N. C. S.," "ALT. N. C. S.," or "Local."

b. The blank space on line 7 will be filled in to conform to one of the following sample forms:

- (1) The First Corps Area net.
- (2) The New York State net.
- (3) The Second Area of Pennsylvania district net.
- (4) The ——— * local net.

3. Effort will be made to assign all amateurs now affiliated with the Signal Corps to their logical place under the revised plan.

SECTION IV.—TRAFFIC

1. Personal messages not of a business nature may be accepted for transmission to any part of the United States, Philippine Islands, and Hawaii without cost, providing such messages would not have been sent by available commercial agencies.

2. Philippine and Hawaiian traffic will be routed as follows:

From Ninth Corps Area.—As prescribed by signal officer, Ninth Corps Area.

From all other corps areas.—Via Army net control station, Fort Monmouth, N. J.

3. United States' traffic will be routed through the channels indicated on attached photostat of nets.

SECTION V.—SCHEDULES

1. Schedules are indicated on attached photostat of traffic schedules.

SECTION VI.—REPORTS

1. After each Army amateur night, each corps area signal officer and the Army amateur liaison agent at Fort Monmouth will submit to the Chief Signal Officer a report covering the actual traffic handled by his station during that night. The form used will be as indicated below:

Traffic report First Corps Area amateur station for December 10, 1928

Number of messages	To (State or Army)	From (State or Army)	Remarks
2	Me.....	Vermont.....	
1	Mass.....	1 CA NCS (Syce).....	
1	R. I.....	N. Y.....	
1	Army.....	Conn.....	
1	Mass.....	Army.....	
1	Army.....	Mass.....	

SECTION VII.—EMERGENCY OPERATION

1. When an emergency of any nature threatens any portion of the United States the Army amateur stations in that corps area are expected to man their stations; each net-control station will endeavor to mobilize the stations in his net and stand by prepared to send and receive any traffic to or from the

* Fill in descriptive term applicable to the corps area in question.

threatened area until such time as he may be notified by the next higher net-control station that his services are no longer required.

SECTION VIII.—WEEKLY OPERATIONS

1. All except local nets will function on Monday of each week, according to the general schedule furnished each corps area signal officer.

POLE SETTING WITH EXPLOSIVES

C. M. BILZ

[Republished from Coast Guard Communication Bulletin, January, 1929]

The last issue of the Coast Guard Communication Bulletin touched briefly on the setting of poles at Galveston by the use of dynamite. As this method is a comparatively recent innovation, particularly adapted to conditions frequently encountered in Coast Guard operations, a brief description may be of interest.

This method is adapted to sections where poles are usually rocked down, due to the presence of water and sand, where wet sand covers old marsh, or where roots and shells are encountered; conditions which were difficult to overcome using old methods. In fact, dynamite may be used at any point where the ground is damp enough to hold—momentarily—the gas generated by the discharge of the explosive. It is estimated that twice the number of poles may be set in a given time with the same amount of labor.

The exact location of the pole having been determined, a small hole just large enough to set the butt of the pole into is dug to a depth of approximately 8 inches to keep the butt in line. A 2½-inch iron pipe is driven to the exact depth to which the pole is to be set. The earth is then tamped out of the pipe with an iron bar or in cases where the earth is too solid or hard to be tamped out, is drilled out with an auger. The pipe may also be worked down with the bar in it, thus saving the necessity of tamping or drilling out the earth or sand. In the event that hardpan is reached before the pipe is worked to the required depth a half stick of dynamite may be inserted into the pipe to the depth reached, the pipe pulled up, and the charge exploded to loosen the hardpan. In most cases the pipe may then be driven to the required depth. From one to two sticks of the 40 per cent dynamite, depending on the character of soil and size of pole to be set, is then tamped into the pipe with a wooden stick, care being taken to see that the dynamite reaches the bottom of the pipe. An electric detonator having previously been placed in the dynamite, the pipe is withdrawn from the hole over the leads of the detonator. The pole is then set in the small hole heretofore mentioned. Twenty and twenty-five foot poles may be held in line